



Spectral Gamma-Ray Borehole  
Log Data Report

Page 1 of 2

Borehole

41-14-04

Log Event A

### Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-114</u>	Site Number : <u>299-W23-69</u>
N-Coord : <u>35,102</u>	W-Coord : <u>75,737</u>	TOC Elevation : <u>664.93</u>
Water Level, ft :	Date Drilled : <u>3/20/1956</u>	

### Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.313</u>	ID, in. : <u>8</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>125</u>	

### Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	

### Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>7/12/1995</u>	Logging Engineer: <u>Mike Widdop</u>
Start Depth, ft.: <u>123.7</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>33.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>7/13/1995</u>	Logging Engineer: <u>Mike Widdop</u>
Start Depth, ft.: <u>33.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Borehole

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**Analysis Information**

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Analyst : P.D. HenwoodData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 12/6/1995**Analysis Notes :**

This borehole was logged in two log runs. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated multiple energy versus channel number recalibrations during processing of the data to maintain proper peak identification. A depth overlap, where data was collected on separate days at the same depth, occurred in this borehole at 33 ft. The calculated concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness is 5/16 (0.3125) inch. Casing-correction factors for a 0.33-in.-thick steel casing were applied during analysis, which results in an almost negligible over-estimation of the radionuclide concentrations.

Cs-137 was the only man-made radionuclide identified in this borehole. This contaminant was measured from the ground surface to about 6 ft at concentrations less than 10 pCi/g and at the very bottom of the borehole at a concentration less than 1 pCi/g.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank SX-114.

**Log Plot Notes:**

Three log plots are provided. The Cs-137 concentrations are provided in a separate log plot to document the relative concentrations and shape of the distribution. A plot of naturally occurring radionuclides (K-40, U-238, and Th-232) is also provided, which can be used for lithology interpretation. A combination plot includes logs of Cs-137, natural gamma, total gamma derived from the spectral data, and the latest available data from the WHC Tank Farms gross gamma logging. With the exception of scale changes, no attempt has been made to adjust for depth discrepancies or other potential problems in the WHC gross gamma data. The energy peaks from which the radionuclide concentrations were derived are included in the headings for the Cs-137 and natural gamma plots.

The statistical uncertainty in a measurement is represented by uncertainty bars on the log plots where appropriate. This uncertainty is reported at the 95-percent confidence interval. The minimum detectable activity (MDA) is represented as an open circle on the plots. The MDA of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible. If the reported concentration is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and detection is not assured with 95-percent certainty.